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- WIPO/PCT Patents Fulltext (File 349)
- TRADEMARKSCAN - U.S. Federal (File 226)

#### DialogLink 5 Release Notes

New features available in the latest release of DialogLink 5 (August 2006)

- Ability to resize images for easier incorporation into DialogLink Reports
- New settings allow users to be prompted to save Dialog search sessions in the format of their choice (Microsoft Word, RTF, PDF, HTML, or TEXT)
- Ability to set up Dialog Alerts by Chemical Structures and the addition of Index Chemicus as a structure searchable database
- Support for connections to STN Germany and STN Japan services

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\*\*\* ANNOUNCEMENTS \*\*\*

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NEW FILE

\*\*\*File 651, TRADEMARKSCAN(R) - China. See HELP NEWS 651 for details.

RESUMED UPDATING

\*\*\*File 523, D&B European Financial Records

\*\*\*

RELOADS COMPLETED

\*\*\*File 227, TRADEMARKSCAN(R) - Community Trademarks

\*\*\*

FILES RENAMED

\*\*\*File 321, PLASPEC now known as Plastic Properties Database

\*\*\*

FILES REMOVED

\*\*\*File 601, Early Edition Canada

\*\*\*

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? Help Off Line

\* \* \*

Connecting to Suzanne Noakes - Dialog - 276629

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? b 155 biosci medicine 399

>>>W: 44 is unauthorized

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*\*File 185: The file has been reloaded to add archive records back to 1864. Accession numbers have changed.*

[File 357] Derwent Biotech Res. \_1982-2008/Aug W3  
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(c) 2008 Reed Business Information Ltd. All rights reserved.

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(c) 2008 American Chemical Society. All rights reserved.

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[File 444] New England Journal of Med. 1985-2008/May W4  
(c) 2008 Mass. Med. Soc. All rights reserved.

? s MrgA and bacillus

296 MRGA

629664 BACILLUS

S1 196 S MRGA AND BACILLUS

? rd

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S2 45 RD (UNIQUE ITEMS)

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149547 SECRETE

108 SCRETION

11 EXPRESS

9465954 EXPRESSION

S3 29 S S2 AND (SECRETE OR SCRETION OR EXPRESS OR EXPRESSION)

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45 S2

149547 SECRETE

108 SCRETION

844482 EXPRESS

9465954 EXPRESSION

S4 29 S S2 AND (SECRETE OR SCRETION OR EXPRESS OR EXPRESSION)

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>>>W: KWIC option is not available in file(s): 399

4/KWIC/1 (Item 1 from file: 155)

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MEDLINE(R)

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15777218 PMID: 15150218

Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp. strain PCC 6803.

Li Hong; Singh Abhay K; McIntyre Lauren M; Sherman Louis A

Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907, USA.

Journal of bacteriology ( United States ) Jun 2004 , 186 (11) p3331-45 , ISSN: 0021-9193--Print Journal Code: 2985120R

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp. strain PCC...

...PCC 6803. We determined that a gene (slr1738) encoding a protein similar to PerR in *Bacillus subtilis* was induced by peroxide. We constructed a PerR knockout strain and used it to... ..been studied yet in this strain. A gene (slr1894) that encoded a protein similar to MrgA in *B. subtilis* was upregulated by peroxide, and a strain containing an

mrgA knockout mutation was highly sensitive to peroxide. A number of genes were downregulated, including key... ..encoding histidine kinases. We used PerR mutants and a thioredoxin mutant (TrxA1) to study differential expression in response to peroxide and determined that neither PerR nor TrxA1 is essential for the... (

Descriptors: \*Bacterial Proteins--genetics--GE; \*Cyanobacteria--genetics--GE; \*Gene Expression Regulation, Bacterial--drug effects--DE; \*Hydrogen Peroxide--pharmacology--PD; \*Regulon--physiology--PH; \*Repressor Proteins --genetics...

4/KWIC/2 (Item 2 from file: 155)

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MEDLINE(R)

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15418715 PMID: 14563870

Recognition of DNA by three ferric uptake regulator (Fur) homologs in *Bacillus subtilis*.

Fuangthong Mayuree; Helmann John D

Department of Microbiology, Cornell University, Ithaca, New York 14853-8101, USA.

Journal of bacteriology ( United States ) Nov 2003 , 185 (21) p6348-57 , ISSN: 0021-9193--Print Journal Code: 2985120R

Contract/Grant No.: GM59323; GM; United States NIGMS

Publishing Model Print

Document type: Comparative Study; Journal Article; Research Support, U.S. Gov't, Non-P.H.S.; Research Support,

U.S. Gov't, P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Recognition of DNA by three ferric uptake regulator (Fur) homologs in *Bacillus subtilis*.

*Bacillus subtilis* contains three Fur homologs: Fur, PerR, and Zur. Despite significant sequence similarities, they respond... more of the seven defined positions. Using site-directed mutagenesis, the Per box at the *mrgA* promoter was altered to mimic the core 7-1-7 motif of the Fur and Zur boxes. In vitro, the *mrgA* promoter containing a Zur box was only recognized by Zur, as demonstrated by DNase I footprinting assays. In contrast, both Fur and PerR bound to the *mrgA* promoter region containing a consensus Fur box. Expression analysis of these promoters is consistent with the in vitro data demonstrating as few as... purified Fur protein bound to the candidate Fur boxes, Fur has little effect on *zosA* expression-possibly due to the location of the Fur boxes relative to the *zosA* promoter. Together... (

Descriptors: \**Bacillus subtilis*--metabolism--ME; \*Bacterial Proteins--metabolism --ME; \*DNA, Bacterial--metabolism--ME; \*DNA-Binding Proteins--metabolism... ; *Bacillus subtilis*--genetics--GE; Bacterial Proteins--analysis--AN; Bacterial Proteins--genetics--GE; Binding Sites; DNA Footprinting...

Named Person:

Chemical Name: Bacterial Proteins; DNA, Bacterial; DNA-Binding Proteins; *Escherichia coli* Proteins; MrgA protein, *Bacillus subtilis*; PerR repressor protein, Bacteria; Repressor Proteins; Trans-Activators; Transcription Factors; Zur protein, *E. coli*...

4/KWIC/3 (Item 3 from file: 155)

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MEDLINE(R)

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15010313 PMID: 12486061

The global transcriptional response of *Bacillus subtilis* to peroxide stress is coordinated by three transcription factors.

Helmann John D; Wu Ming Fang Winston; Gaballa Ahmed; Kobel Phil A; Morshedi Maud M; Fawcett Paul; Paddon Chris

Department of Microbiology, Cornell University, Ithaca, NY 14853-8101, USA. [jdh9@cornell.edu](mailto:jdh9@cornell.edu)

Journal of bacteriology ( United States ) Jan 2003 , 185 (1) p243-53 , ISSN: 0021-9193--Print Journal Code: 2985120R

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

The global transcriptional response of *Bacillus subtilis* to peroxide stress is coordinated by three transcription factors.

*Bacillus subtilis* exhibits a complex adaptive response to low levels of peroxides. We used global transcriptional... the PerR, sigma(B), and OhrR transcription factors. Three members of the PerR regulon (*katA*, *mrgA*, and *zosA*) were strongly induced by H<sub>2</sub>O<sub>2</sub> and weakly induced by t... (

Descriptors: \**Bacillus subtilis*--physiology--PH; \*Bacterial Proteins--metabolism --ME; \*Gene Expression



Regulation, Bacterial; \*Hydrogen Peroxide --pharmacology--PD; \*Oxidative Stress; \*Transcription Factors--pharmacology --PD ; Bacillus subtilis--drug effects--DE; Bacillus subtilis --genetics--GE; Bacterial Proteins--genetics--GE; Gene Expression Profiling; Oligonucleotide Array Sequence Analysis; Oxidants--pharmacology --PD; Proteome; Repressor Proteins--genetics--GE; Repressor Proteins...

Named Person:

4/KWIC/4 (Item 4 from file: 155)

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MEDLINE(R)

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14757014 PMID: 12180919

A peroxide-induced zinc uptake system plays an important role in protection against oxidative stress in *Bacillus subtilis*.

Gaballa Ahmed; Helmann John D

Department of Microbiology, Cornell University, Ithaca, NY 14853, USA.

Molecular microbiology ( England ) Aug 2002 , 45 (4) p997-1005 , ISSN: 0950-382X--Print Journal Code: 8712028

Publishing Model Print

Document type: Journal Article; Research Support, Non-U.S. Gov't

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

...peroxide-induced zinc uptake system plays an important role in protection against oxidative stress in *Bacillus subtilis*.

In *Bacillus subtilis*, hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) induces expression of the PerR regulon including catalase (KatA), alkyl hydroperoxide reductase and the DNA-binding protein MrgA. We have identified the P-type metal-transporting ATPase ZosA (formerly YkvW) as an additional member of the perR regulon. Expression of *zosA* is induced by H<sub>2</sub>O<sub>2</sub> and repressed by the PerR metalloregulatory protein, which binds... (

Descriptors: \*Bacillus subtilis--drug effects--DE; \*Hydrogen Peroxide --pharmacology--PD; \*Oxidative Stress; \*Transcription Factors; \*Zinc --metabolism--ME ; Bacillus subtilis--genetics--GE; Bacillus subtilis --metabolism--ME; Bacterial Proteins--genetics--GE; Bacterial Proteins --metabolism--ME; Base Sequence; DNA, Bacterial...

Named Person:

4/KWIC/5 (Item 5 from file: 155)

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MEDLINE(R)

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14635011 PMID: 12029044

Regulation of the *Bacillus subtilis* fur and perR genes by PerR: not all members of the PerR regulon are peroxide inducible.

Fuangthong Mayuree; Herbig Andrew F; Bsat Nada; Helmann John D

Department of Microbiology, Cornell University, Ithaca, New York 14853-8101, USA.

Journal of bacteriology ( United States ) Jun 2002 , 184 (12) p3276-86 , ISSN: 0021-9193--Print Journal Code: 2985120R

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Regulation of the *Bacillus subtilis* fur and perR genes by PerR: not all members of the PerR regulon are...

...Fur) homolog that functions as the central regulator of the inducible peroxide stress response in *Bacillus subtilis*. PerR has been previously demonstrated to regulate the mrgA, katA, ahpCF, hemAXCDBL, and zosA genes. We now demonstrate that PerR also mediates both the... (

Descriptors: \**Bacillus subtilis*--genetics--GE; \**Bacillus subtilis* --metabolism--ME; \*Bacterial Proteins--metabolism--ME; \*Gene Expression Regulation, Bacterial; \*Repressor Proteins--metabolism --ME; \*Transcription Factors ; *Bacillus subtilis*--growth and development--GD; Bacterial Proteins --genetics--GE; Base Sequence; Binding Sites; Hydrogen Peroxide...

Named Person:

4/KWIC/6 (Item 6 from file: 155)

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MEDLINE(R)

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14086046 PMID: 11349039

PerR controls oxidative stress resistance and iron storage proteins and is required for virulence in *Staphylococcus aureus*.

Horsburgh M J; Clements M O; Crossley H; Ingham E; Foster S J

Department of Molecular Biology and Biotechnology, University of Sheffield, Western Bank, Sheffield S10 2TN, England.

Infection and immunity ( United States ) Jun 2001 , 69 (6) p3744-54 , ISSN: 0019-9567--Print Journal Code: 0246127

Publishing Model Print

Document type: Journal Article; Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

...the genes encoding the iron storage proteins ferritin (Ftn) and the ferritin-like Dps homologue, MrgA. Transcription of perR was autoregulated, and PerR repressed transcription of the iron homeostasis regulator Fur, which is a positive regulator of catalase expression. PerR functions as a manganese-dependent, transcriptional repressor of the identified regulon. Elevated iron concentrations... ..infection, analogous to the in vitro activities of OxyR and PerR of *Escherichia coli* and *Bacillus subtilis*, respectively. However, it differs in its response to the metal balance within the cell... (

Descriptors: \*Bacterial Proteins; \*Gene Expression Regulation, Bacterial; \*Iron --metabolism--ME; \*Oxidative Stress--physiology--PH; \*Repressor Proteins; \**Staphylococcus aureus*--pathogenicity--PY...

4/KWIC/7 (Item 7 from file: 155)

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MEDLINE(R)

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13759523 PMID: 11021932

The carboxyl terminus of the *Bacillus subtilis* SecA is dispensable for protein secretion and viability.

van Wely K H; Swaving J; Klein M; Freudl R; Driessen A J

Department of Microbiology, Groningen Biomolecular Sciences and Biotechnology Institute, University of Groningen, Kerklaan 30, 9751 NN Haren, The Netherlands.

Microbiology (Reading, England) ( ENGLAND ) Oct 2000 , 146 ( Pt 10) p2573-81 , ISSN: 1350-0872--Print  
Journal Code: 9430468

Publishing Model Print

Document type: Journal Article; Research Support, Non-U.S. Gov't

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

The carboxyl terminus of the *Bacillus subtilis* SecA is dispensable for protein secretion and viability.

...This region of SecA is highly conserved in Eubacteria, but despite its presence in the *Bacillus subtilis* SecA, the *B. subtilis* genome does not appear to contain a gene for a... ..terminus of SecA fused to glutathione S:-transferase (GST) specifically binds a cytosolic protein, termed MrgA. This protein has been reported to function in relation to oxidative stress, but deletion of the *mrgA* gene does not result in a secretion defect nor does it cause an oxidative stress... (

Descriptors: \*Adenosine Triphosphatases--chemistry--CH; \**Bacillus subtilis* --growth and development--GD; \**Bacillus subtilis*--metabolism--ME; \*Bacterial Proteins--metabolism--ME; \*Carrier Proteins--chemistry--CH; \**Escherichia coli* Proteins; \*Membrane... ; ...ME; Amino Acid Sequence; Carrier Proteins--genetics--GE; Carrier Proteins--metabolism--ME; Gene Deletion; Gene Expression Regulation, Bacterial; Molecular Sequence Data; Oxidative Stress--physiology--PH; Reverse Transcriptase Polymerase Chain Reaction  
Named Person:

4/KWIC/8 (Item 8 from file: 155)

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MEDLINE(R)

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12772459 PMID: 9701813

*Bacillus subtilis* contains multiple Fur homologues: identification of the iron uptake (Fur) and peroxide regulon (PerR) repressors.

Bsat N; Herbig A; Casillas-Martinez L; Setlow P; Helmann J D

Section of Microbiology, Cornell University, Ithaca, NY 14853-8101, USA.

Molecular microbiology ( ENGLAND ) Jul 1998 , 29 (1) p189-98 , ISSN: 0950-382X--Print Journal Code: 8712028

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Bacillus subtilis contains multiple Fur homologues: identification of the iron uptake (Fur) and peroxide regulon (PerR...

...their roles in gene regulation are unknown. Genome sequencing has revealed three fur homologues in Bacillus subtilis: yqkL, yqfV and ygaG. We demonstrate that yqkL encodes an iron uptake repressor: both... ..highly resistant to peroxides and overexpresses catalase, alkyl hydroperoxide reductase and the DNA binding protein MrgA. Nine spontaneous perR mutations, isolated by virtue of their ability to derepress mrgA transcription in the presence of managanous ion, all contain sequence changes in the ygaG locus... (

Descriptors: \*Bacillus subtilis--metabolism--ME; \*Bacterial Proteins--metabolism --ME; \*Iron--metabolism--ME; \*Peroxides--metabolism--ME; \*Regulon; \*Repressor... ; Amino Acid Sequence; Bacillus subtilis--genetics--GE; Bacterial Proteins--genetics--GE; Gene Expression Regulation, Bacterial; Hydroxybenzoic Acids--metabolism--ME; Molecular Sequence Data; Oxidative Stress; Repressor Proteins--genetics--GE...

Named Person:

4/KWIC/9 (Item 9 from file: 155)

Fulltext available through: [STIC Full Text Retrieval Options](#)

MEDLINE(R)

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12448083 PMID: 9393687

Expression of a stress- and starvation-induced dps/pexB-homologous gene is controlled by the alternative sigma factor sigmaB in Bacillus subtilis.

Antelmann H; Engelmann S; Schmid R; Sorokin A; Lapidus A; Hecker M

Institut fur Mikrobiologie und Molekularbiologie, Ernst-Moritz-Arndt-Universitat, Greifswald, Germany.

Journal of bacteriology ( UNITED STATES ) Dec 1997 , 179 (23) p7251-6 , ISSN: 0021-9193--Print Journal

Code: 2985120R

Publishing Model Print

Document type: Comparative Study; Journal Article; Research Support, Non-U.S. Gov't

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Expression of a stress- and starvation-induced dps/pexB-homologous gene is controlled by the alternative sigma factor sigmaB in Bacillus subtilis.

SigmaB-dependent general stress proteins (Gsps) of Bacillus subtilis are essential for the development of glucose-starvation-induced cross-resistance to oxidative challenge... ..that one prominent Gsp displayed strong sequence similarity to the previously characterized oxidative-stress-inducible MrgA protein of B. subtilis and to the starvation-induced Dps/PexB protein of Escherichia coli. We therefore designated this prominent Gsp Dps. While MrgA belongs to the peroxide-stress-inducible proteins needed for the H2O2-inducible adaptive response to... (

Descriptors: \*Bacillus subtilis--genetics--GE; \*Bacterial Proteins--genetics--GE; \*Bacterial Proteins--metabolism--ME; \*DNA-Binding Proteins--genetics--GE; \*Escherichia coli Proteins; \*Gene Expression Regulation, Bacterial; \*Sigma Factor--metabolism--ME

Chemical Name: Bacterial Outer Membrane Proteins; Bacterial Proteins; DNA-Binding Proteins ; DPS protein, Bacteria; Escherichia coli Proteins; MrgA protein, Bacillus subtilis; SigB protein, Bacteria; Sigma Factor; dps protein, E coli; Glucose

4/KWIC/10 (Item 10 from file: 155)

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MEDLINE(R)

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12001267 PMID: 8932315

Mutation of the Bacillus subtilis alkyl hydroperoxide reductase (ahpCF) operon reveals compensatory interactions among hydrogen peroxide stress genes.

Bsat N; Chen L; Helmann J D

Section of Microbiology, Cornell University, Ithaca, New York 14853, USA.

Journal of bacteriology ( UNITED STATES ) Nov 1996 , 178 (22) p6579-86 , ISSN: 0021-9193--Print Journal Code: 2985120R

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Mutation of the Bacillus subtilis alkyl hydroperoxide reductase (ahpCF) operon reveals compensatory interactions among hydrogen peroxide stress genes.

In Bacillus subtilis, hydrogen peroxide induces the synthesis of catalase (KatA), alkyl hydroperoxide reductase (AhpCF), and a DNA-binding protein of the Dps family (MrgA). KatA, AhpCF, heme biosynthesis enzymes, and MrgA are also induced upon entry into stationary phase under conditions of iron and manganese limitation... ..regulon repressor, PerR, we used mini-Tn10 mutagenesis to identify loci affecting the regulation of mrgA. From this screen, we isolated two mini-Tn10 insertions in ahpC, the gene encoding the small subunit of AhpCF, that increase the transcription of mrgA-lacZ even in iron-supplemented minimal medium. Indeed, these ahpC::Tn10 insertions lead to elevated expression from all peroxide regulon promoters, including those for mrgA, katA, hemAXCDBL, and ahpCF. As a result, the ahpC::Tn10 mutants display an increased resistance... ..consensus operator (per box). We demonstrate that the ability of ahpC::Tn10 mutations to derepress mrgA requires aerobic growth. In contrast, a second distinct trans-acting regulatory mutation bypasses this requirement... (

Descriptors: \*Arabidopsis Proteins; \*Bacillus subtilis--genetics--GE; \*Genes, Bacterial; \*Hydrogen Peroxide--pharmacology--PD; \*Operon; \*Oxidoreductases --genetics--GE; \*Peroxidases ; Aerobiosis; Amino Acid Sequence; Anaerobiosis; Bacillus subtilis --drug effects--DE; Bacillus subtilis--enzymology--EN; Bacillus subtilis--growth and development--GD; Bacterial Proteins --biosynthesis--BI; Bacterial Proteins--genetics--GE; Base Sequence; DNA-Binding Proteins--biosynthesis--BI; DNA-Binding Proteins--genetics--GE ; Gene Expression Regulation, Bacterial; Genes, Reporter; Molecular Sequence Data; Mutagenesis, Insertional; Mutation; Peroxiredoxins; Phenotype; Plant Proteins--genetics...

Named Person:

Chemical Name: Arabidopsis Proteins; Bacterial Proteins; DNA-Binding Proteins; KATA protein, Arabidopsis; MrgA protein, Bacillus subtilis; Plant Proteins; Repressor Proteins; Trans-Activators; Hydrogen Peroxide; Oxidoreductases; Peroxidases; Peroxiredoxins

4/KWIC/11 (Item 11 from file: 155)

Fulltext available through: [STIC Full Text Retrieval Options](#)

MEDLINE(R)

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11647395 PMID: 8709848

*Bacillus subtilis* MrgA is a Dps(PexB) homologue: evidence for metalloreulation of an oxidative-stress gene.

Chen L; Helmann J D

Section of Microbiology, Cornell University, Ithaca, New York 14853-8101, USA.

Molecular microbiology ( ENGLAND ) Oct 1995 , 18 (2) p295-300 , ISSN: 0950-382X--Print Journal Code: 8712028

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

*Bacillus subtilis* MrgA is a Dps(PexB) homologue: evidence for metalloreulation of an oxidative-stress gene.

Upon the cessation of exponential growth, *Bacillus subtilis* enters a transition phase leading to either sporulation or a non-sporulating stationary phase. During this transition period, cells secrete degradative enzymes, become competent for DNA transformation, are motile and acquire resistance to oxidative killing. We now report that *mrgA*, originally identified as a gene repressed by metal ions, encodes a member of the Dps/PexB family of general stress proteins. Like *Escherichia coli* Dps(PexB), MrgA forms highly stable, multimeric protein-DNA complexes which accumulate in stationary-phase cells and protect against oxidative killing. MrgA is part of an inducible oxidative stress response in *B. subtilis*: *mrgA* is induced by hydrogen peroxide, and a strain lacking MrgA displays increased sensitivity to oxidative killing. In addition, a hydrogen peroxide-resistant mutant, which constitutively overproduces catalase and alkyl hydroperoxide reductase, also overproduces MrgA. These results indicate a complex interplay between metal ions and the expression of the *B. subtilis* oxidative stress response.

(

Descriptors: \**Bacillus subtilis*--genetics--GE; \*Bacterial Proteins--genetics--GE; \*DNA-Binding Proteins--genetics--GE; \*Gene Expression Regulation, Bacterial; \*Oxidative Stress--genetics--GE

Chemical Name: Bacterial Proteins; DNA-Binding Proteins; Heat-Shock Proteins; MrgA protein, *Bacillus subtilis*; Repressor Proteins; Hydrogen Peroxide

4/KWIC/12 (Item 12 from file: 155)

Fulltext available through: [STIC Full Text Retrieval Options](#)

MEDLINE(R)

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11467925 PMID: 7667267

Coordinate regulation of *Bacillus subtilis* peroxide stress genes by hydrogen peroxide and metal ions.

Chen L; Keramati L; Helmann J D

Section of Microbiology, Cornell University, Ithaca, NY 14853-8101, USA.

Proceedings of the National Academy of Sciences of the United States of America ( UNITED STATES ) Aug 29 1995 , 92 (18) p8190-4 , ISSN: 0027-8424--Print Journal Code: 7505876

Publishing Model Print

Document type: Journal Article; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Coordinate regulation of *Bacillus subtilis* peroxide stress genes by hydrogen peroxide and metal ions.

The *Bacillus subtilis* *mrgA* gene encodes an abundant DNA-binding protein that protects cells against the lethal effects of H<sub>2</sub>O<sub>2</sub>. Transcription of *mrgA* is induced by H<sub>2</sub>O<sub>2</sub> or by entry into stationary phase when manganese and iron levels are low. We have selected for strains derepressed for transcription of *mrgA* in the presence of Mn(II). The resulting *cis*-acting mutants define an operator site just upstream of the *mrgA* promoter. Similar sequences flank the promoters for the catalase gene, *katA*, and the heme biosynthesis operon, *hemAXCDBL*. Like *mrgA*, transcription of the *katA* and *hem* genes is repressed by Mn(II), which thereby potentiates the killing action of H<sub>2</sub>O<sub>2</sub>. We identified two classes of *trans*-acting mutants derepressed for *mrgA* transcription in the presence of Mn(II): some exhibit a coordinate derepression of *MrgA*, catalase, heme biosynthesis, and alkyl hydroperoxide reductase and are H<sub>2</sub>O<sub>2</sub> resistant, while others have reduced ... (

Descriptors: \**Bacillus subtilis*--drug effects--DE; \*Bacterial Proteins--genetics --GE; \*DNA-Binding Proteins--genetics--GE; \*Gene Expression Regulation, Bacterial; \*Hydrogen Peroxide--pharmacology--PD; \*Manganese --pharmacology--PD ; *Bacillus subtilis*--genetics--GE; Bacterial Proteins--biosynthesis --BI; Base Sequence; Catalase--biosynthesis--BI; Catalase--genetics--GE; Cations, Divalent; DNA-Binding Proteins--biosynthesis--BI; Gene Expression Regulation, Bacterial--drug effects--DE; Genes, Bacterial ; Heme--biosynthesis--BI; Heme--genetics--GE; Molecular Sequence...

Named Person:

Gene Symbol: *hem*; *katA*; *mrgA*

Record Date Created:

Chemical Name: Bacterial Proteins; Cations, Divalent; DNA-Binding Proteins; *MrgA* protein, *Bacillus subtilis*;

Heme; Manganese; Hydrogen Peroxide; Catalase

4/KWIC/13 (Item 13 from file: 155)

Fulltext available through: [STIC Full Text Retrieval Options](#)

MEDLINE(R)

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10662296 PMID: 8396117

Metalloregulation in *Bacillus subtilis*: isolation and characterization of two genes differentially repressed by metal ions.

Chen L; James L P; Helmann J D

Section of Microbiology, Cornell University, Ithaca, New York 14853.

Journal of bacteriology ( UNITED STATES ) Sep 1993 , 175 (17) p5428-37 , ISSN: 0021-9193--Print Journal

Code: 2985120R

Publishing Model Print

Document type: Journal Article; Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, Non-P.H.S.

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Metalloregulation in *Bacillus subtilis*: isolation and characterization of two genes differentially repressed by metal ions.

We have cloned two metal-regulated genes (*mrgA* and *mrgC*) from *Bacillus subtilis* by using transposon Tn917-lacZ. Both were isolated as iron-repressible gene fusions, but the metal specificity and sensitivity of gene repression are distinct. Transcription of *mrgA*-lacZ is induced at the end of logarithmic-phase growth in minimal medium, and this ... ..prevented by excess manganese, iron, cobalt, or copper. Limitation for metal ions is sufficient for *mrgA*-lacZ induction, since resuspension in medium lacking both manganese and iron rapidly induces transcription. Transcription... ..induced by iron deprivation but is not repressed by added manganese or other metal ions. Expression of *mrgC*-lacZ and a 2,3-dihydroxybenzoic acid-based siderophore is repressed in parallel... ..iron effects repression. We have cloned and sequenced the promoter and regulatory regions of both *mrgA* and *mrgC*. Both genes are preceded by a predicted sigma A-dependent promoter element with... (

Descriptors: \**Bacillus subtilis*--genetics--GE; \*Gene Expression Regulation, Bacterial; \*Metals--metabolism--ME; Amino Acid Sequence; *Bacillus subtilis*--growth and development--GD; Bacterial Proteins--genetics--GE; Bacterial Proteins--metabolism--ME; Base Sequence...

Named Person:

Gene Symbol: *mrgA*; *mrgC*

Record Date Created:

4/KWIC/14 (Item 1 from file: 24)

Fulltext available through: [STIC Full Text Retrieval Options](#)

CSA Life Sciences Abstracts

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0001799535 IP Accession No: 4240585

Expression of a stress- and starvation-induced *dps/pexB*-homologous gene is controlled by the alternative sigma factor sigma super(B) in *Bacillus subtilis*

Antelmann, H; Engelmann, S; Schmid, R; Sorokin, A; Lapidus, A; Hecker, M\* Inst. fuer Mikrobiologie und Molekularbiologie, Ernst-Moritz-Arndt-Univ., 17487 Greifswald, FRG  
Journal of Bacteriology , v 179 , n 23 , p 7251-7256 , December 1997  
Publication Date: 1997

Document Type: Journal Article

Record Type: Abstract

Language: English

Summary Language: English

ISSN: 0021-9193

File Segment: Bacteriology Abstracts (Microbiology B); Genetics Abstracts; Nucleic Acids Abstracts

Expression of a stress- and starvation-induced *dps/pexB*-homologous gene is controlled by the alternative sigma factor sigma super(B) in *Bacillus subtilis*

Abstract:

sigma super(B)-dependent general stress proteins (Gsp) of *Bacillus subtilis* are essential for the development of glucose-starvation-induced cross-resistance to oxidative challenge... ..that one prominent Gsp displayed strong sequence similarity to the previously characterized oxidative-stress-inducible *MrgA* protein of *B. subtilis* and to the starvation-induced *Dps/PexB* protein of *Escherichia coli*. We therefore designated this prominent Gsp *Dps*. While



MrgA belongs to the peroxide-stress-inducible proteins needed for the H sub(2)O sub...

Descriptors: starvation; oxidation; dps gene; transcription; sigma super(B) factor; pexB gene; Bacillus subtilis  
Identifiers:

4/KWIC/15 (Item 1 from file: 34)

Fulltext available through: [STIC Full Text Retrieval Options](#)

SciSearch(R) Cited Ref Sci

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14979497 Genuine Article#: 025DC No. References: 67

Bacterial nucleoid dynamics: oxidative stress response in Staphylococcus aureus

Author: Morikawa K (REPRINT) ; Ohniwa RL; Kim J; Maruyama A; Ohta T; Takeyasu K

Corporate Source: Univ Tsukuba, Grad Sch Comprehens Human Sci, Inst Basic Med Sci, Tsukuba/Ibaraki

3058575/Japan/ (REPRINT); Univ Tsukuba, Grad Sch Comprehens Human Sci, Inst Basic Med Sci, Tsukuba/Ibaraki

3058575/Japan/; Kyoto Univ, Grad Sch Biostudies, Lab Plasma Membrane & Nucl Signaling, Sakyo Ku, Kyoto

6068502//Japan/ ( morikawa@sakura.cc.tsukuba.ac.jp )

Journal: GENES TO CELLS , 2006 , V 11 , N4 ( APR ) , P 409-423

ISSN: 1356-9597 Publication date: 20060400

Publisher: BLACKWELL PUBLISHING , 9600 GARSINGTON RD, OXFORD OX4 2DQ, OXON, ENGLAND

Language: English Document Type: ARTICLE ( ABSTRACT AVAILABLE )

Abstract: ...Bioinformatic analysis suggested that this was attributable to the lack of IHF that regulate the expression of a nucleoid protein, Dps, required for nucleoid compaction in E. coli. On the other hand, under oxidative conditions, MrgA (a staphylococcal Dps homolog) was over-expressed and a drastic compaction of the nucleoid was detected. A knock-out mutant of the gene encoding the transcription factor (perR) constitutively expressed mrgA, and its nucleoid was compacted without the oxidative stresses. The regulatory mechanisms of Dps/ MrgA expression and their biological significance were postulated in relation to the nucleoid compaction.

Identifiers-- ...ATOMIC-FORCE MICROSCOPY; DNA-BINDING PROTEIN; ESCHERICHIA-COLI RESPONSE; BACILLUS-SUBTILIS; TRANSCRIPTION FACTOR; HYDROGEN-PEROXIDE; SIGMA-FACTOR; SUPEROXIDE-DISMUTASE; STATIONARY-PHASE; IRON HOMEOSTASIS

4/KWIC/16 (Item 2 from file: 34)

Fulltext available through: [STIC Full Text Retrieval Options](#)

SciSearch(R) Cited Ref Sci

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13453354 Genuine Article#: 882OX No. References: 51

The PerR regulon in peroxide resistance and virulence of Streptococcus pyogenes

Author: Brenot A; King KY; Caparon MG (REPRINT)

Corporate Source: Washington Univ, Sch Med, Dept Mol Microbiol, Box 8230/St Louis//MO/63110 (REPRINT);

Washington Univ, Sch Med, Dept Mol Microbiol, St Louis//MO/63110 ( caparon@borcim.wustl.edu )

Journal: MOLECULAR MICROBIOLOGY , 2005 , V 55 , N1 ( JAN ) , P 221-234

ISSN: 0950-382X Publication date: 20050100

Publisher: BLACKWELL PUBLISHING LTD , 9600 GARSINGTON RD, OXFORD OX4 2DG, OXON, ENGLAND

Language: English Document Type: ARTICLE ( ABSTRACT AVAILABLE )

Abstract: ...encodes a putative cold shock protein. The gene encoding the Dps-like peroxide resistance protein MrgA was repressed by PerR, consistent with the presence of a PerR binding site in its promoter. Phenotypic analyses of PerR(-), AhpC(-) and MrgA(-) mutants revealed that while AhpC is not essential for resistance to challenge with hydrogen peroxide... ..peroxide and is required for virulence in a murine model of infection. In contrast, a

MrgA(-) mutant was hypersensitive to challenge with peroxide in vitro, but was fully virulent in all...

Identifiers-- ...ALKYL HYDROPEROXIDE REDUCTASE; INVASIVE SKIN INFECTION; GROUP-A STREPTOCOCCI; BACILLUS-SUBTILIS; HYDROGEN-PEROXIDE; OXIDATIVE-STRESS; GENE-EXPRESSION; BACTERIAL PATHOGENESIS; STAPHYLOCOCCUS-AUREUS; FIBRONECTIN-BINDING

4/KWIC/17 (Item 1 from file: 35)

Dissertation Abs Online

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01452205 ORDER NO: AADAA-I9542489

REGULATION OF GENE EXPRESSION BY METAL IONS IN BACILLUS SUBTILIS (SIDEROPHORE, IRON)

Author: CHEN, LEI

Degree: PH.D.

Year: 1995

Corporate Source/Institution: CORNELL UNIVERSITY ( 0058 )

Source: Volume 5608B of Dissertations Abstracts International.

PAGE 4134 . 236 PAGES

REGULATION OF GENE EXPRESSION BY METAL IONS IN BACILLUS SUBTILIS (SIDEROPHORE, IRON)

...due to its insolubility at neutral pH in an aerobic environment. Under iron limiting conditions, *Bacillus subtilis* synthesizes and excretes high affinity Fe(III) chelators, known as siderophores. Both the synthesis ... ..using Tn917-lacZ transposon mutagenesis, I cloned three metal-regulated genes from *B. subtilis*, namely mrgA, mrgC and fliD. Transcription of mrgC-lacZ is induced by iron deprivation. Expression of mrgC-lacZ and synthesis of 2,3-dihydroxybenzoic acid-based siderophore is repressed in... ..structural genes, suggesting that *B. subtilis* flagellar genes are organized in a hierarchy of gene expression. Expression from the fliD operon promoter, but not the upstream flagellin promoter, is repressed by iron... ..of metalloregulation is the promoter rather than the  $\sigma^D$  protein.

Induction of mrgA-lacZ occurs at the end of logarithmic growth in iron-deficient medium and is prevented by addition of manganese, iron, cobalt or copper. Sequence analysis indicates that mrgA encodes a Dps(PexB) homolog. MrgA appears to be part of an inducible oxidative stress response in *B. subtilis*. Like Dps, MrgA forms highly stable, multimeric protein-DNA complexes which protect cells against oxidative killing. mrgA mutants are sensitive to  $H_2O_2$ . MrgA, along with catalase and alkyl hydroperoxide reductase, is induced by  $H_2O_2$  and... ..overproduced in an  $H_2O_2$  resistant mutant. Moreover, cis-acting mutants derepressed for mrgA expression define a conserved operator sequence for a postulated *B. subtilis* peroxide regulon. This regulon includes mrgA, the catalase gene (katA), the heme biosynthesis operon and the alkyl hydroperoxide reductase (ahpCF) operon. Indeed, the mrgA, katA, hem and ahp genes are coordinately regulated. Furthermore, a mutation in either the katA gene or the ahpCF operon lead to derepression of the peroxide regulon. Unlike mrgA and katA, the ahpCF operon is subject to repression by

manganese but not by iron...

4/KWIC/18 (Item 1 from file: 98)

General Sci Abs

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03751004 H.w. Wilson Record Number: BGS198001004

Expression of a stress- and starvation-induced dps/pexB-homologous gene is controlled by the alternative sigma factor sB in *Bacillus subtilis*.

Antelmann, Haike

Engelmann, Susanne; Schmid, Roland

Journal of Bacteriology ( J Bacteriol ) v. 179 no23 (Dec. '97) p. 7251-6

Special Features: bibl il ISSN: 0021-9193

Language: English

Country Of Publication: United States

Expression of a stress- and starvation-induced dps/pexB-homologous gene is controlled by the alternative sigma factor sB in *Bacillus subtilis*.

Abstract: A sB-dependent general stress protein of *Bacillus subtilis* was characterized. This protein, called Dps, had strong sequence similarity with the previously characterized oxidative-stress-inducible Mr gA protein of *B. subtilis* and the starvation-induced Dps/PexB protein of *Escherichia coli*. Dps...

Descriptors:

...Bacteria; *Bacillus*

4/KWIC/19 (Item 1 from file: 144)

Pascal

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16646051 PASCAL No.: 04-0296712

Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp. strain PCC 6803

HONG LI; SINGH Abhay K; MCINTYRE Lauren M; SHERMAN Louis A

Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907, United States; Computational Genomics and Department of Agronomy, Purdue University, West Lafayette, Indiana 47907, United States

Journal: Journal of bacteriology, 2004  
, 186 (11) 3331-3345

Language: English

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Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp. strain PCC...

... PCC 6803. We determined that a gene (slr1738) encoding a protein similar to PerR in *Bacillus subtilis* was induced by peroxide. We constructed a PerR knockout strain and used it to...

...been studied yet in this strain. A gene (slr1894) that encoded a protein similar to MrgA in *B. subtilis* was upregulated by peroxide, and a strain containing an mrgA knockout mutation was highly sensitive to peroxide. A number of genes were downregulated, including key...

... encoding histidine kinases. We used PerR mutants and a thioredoxin mutant (TrxA1) to study differential expression in response to peroxide and determined that neither PerR nor TrxA1 is essential for the...

English Descriptors: *Synechocystis*; Gene expression; Hydrogen Peroxides; Strain; Microbiology; Bacteriology

French Descriptors: *Synechocystis*; Expression genique; Hydrogene Peroxyde; Souche; Microbiologie; Bacteriologie

4/KWIC/20 (Item 2 from file: 144)

Pascal

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11226529 PASCAL No.: 94-0044260

Metalloregulation in *Bacillus subtilis* : isolation and characterization of two genes differentially repressed by metal ions

LEI CHEN; JAMES L P; HELMANN J D  
Cornell univ., sect. microbiology, Ithaca NY 14853, USA  
Journal: Journal of bacteriology, 1993  
, 175 (17) 5428-5437

Language: English

Metalloregulation in *Bacillus subtilis* : isolation and characterization of two genes differentially repressed by metal ions

We have cloned two metal-regulated genes (mrgA and mrgC) from *Bacillus subtilis* by using transposon Tn917-hacZ. Both were isolated as iron-repressible gene fusions, but the metal specificity and sensitivity of gene repression are distinct. Transcription of mrgA-lacZ is induced at the end of logarithmic-phase growth in minimal medium, and this...

... prevented by excess manganese, iron, cobalt, or copper. Limitation for metal ions is sufficient for mrgA-lacZ induction, since resuspension in medium lacking both manganese and iron rapidly induces transcription. Transcription of mrgA-lacZ is also induced by iron deprivation but is not repressed by added manganese or...

English Descriptors: *Bacillus subtilis*; Heavy metal; Environmental factor; Regulation(control); Gene expression; Specificity; Gene organization; Transcription promoter; Regulatory sequence; Nucleotide sequence; Aminoacid sequence; Structure function relationship; Iron

French Descriptors: *Bacillus subtilis*; Metal lourd; Facteur milieu; Regulation; Expression genique; Specificite; Organisation gene; Promoteur transcription; Sequence regulatrice; Sequence nucleotide; Sequence aminoacide; Relation structure fonction; Fer; Gene mrgA; Gene mrgC

Spanish Descriptors: *Bacillus subtilis*; Metal pesado; Factor medio; Regulacion; Expresion genetica; Especificidad; Organizacion gene; Promotor transcripcion; Secuencia reguladora...

4/KWIC/21 (Item 1 from file: 357)

Fulltext available through: [STIC Full Text Retrieval Options](#)

Derwent Biotech Res.

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0408479 DBA Accession No.: 2006-21975

Paired *Bacillus anthracis* Dps (mini-ferritin) have different reactivities with peroxide DNA protection during starvation protein production and characterization for use in potential drug target for bacterium infection

Author: LIU XF; KIM K; LEIGHTON T; THEIL EC

Corporate Affiliate: Childrens Hosp Univ Calif Berkeley Chung Ang Univ

Corporate Source: Liu XF, Childrens Hosp, Oakland Res Inst, 5700 Martin Luther King, Jr Way, Oakland, CA 94609 USA

Journal: JOURNAL OF BIOLOGICAL CHEMISTRY ( 281, 38, 27827-27835 ) 2006

ISSN: 0021-9258

Language: English

Paired *Bacillus anthracis* Dps (mini-ferritin) have different reactivities with peroxide DNA protection during starvation protein production...

Abstract: ...chemistry (metal/osmotic/temperature/nutrient/oxidant) and sometimes to confer virulence. Paired Dps proteins in *Bacillus*, rare in other bacteria, have 60% sequence identity. To explore functional differences in paired *Bacilli*... protein, we measured ferroxidase activity and DNA protection (hydroxyl radical) for Dps protein dodecamers from *Bacillus anthracis* (Ba) since crystal structures and iron mineralization (iron-stain) were known. The self-assembled... Fe<sup>2+</sup>/H<sub>2</sub>O<sub>2</sub> catalysis, inhibited protein-independent Fe<sup>2+</sup>/H<sub>2</sub>O<sub>2</sub> reactions. Sequence similarities between Ba Dps1 and *Bacillus subtilis* DpsA(Dps1), which is regulated by general stress factor (SigmaB) and Fur, and between Ba Dps2 and *B. subtilis* MrgA, which is regulated by H<sub>2</sub>O<sub>2</sub> (PerR), suggest the function of Ba Dps1 is iron sequestration...

E.C. Numbers:

Descriptors: ...1, -2, ferritin analysis, plasmid pET-3a-BaDps1, plasmid pET-3a-BaDps2-mediated gene transfer, expression in *Escherichia coli*, SDS-PAGE, gel filtration, centrifugation, iron, peroxide reactivity effect, DNA degradation, appl...

Section: ...GENETIC TECHNIQUES and APPLICATIONS-Gene Expression Techniques and Analysis; DISEASE-Infectious Disease (non-viral)

4/KWIC/22 (Item 2 from file: 357)

Derwent Biotech Res.

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0374357 DBA Accession No.: 2005-20063 PATENT

Novel progeny cell derived from parent cell, and comprising gene encoding metallo regulated gene A MrgA protein or its functional homolog and/or DNA segment operably linked with encoding gene, useful for producing protein of interest plasmid-mediated gene transfer and expression in *Bacillus* sp. for recombinant protein production

Author: NIELSEN A K; RASMUSSEN M D

Patent Assignee: NOVOZYMES AS 2005

Patent Number: WO 200556799 Patent Date: 20050623 WPI Accession No.: 2005-445177 (200545)

Priority Application Number: DK 20031824 Application Date: 20031210

National Application Number: WO 2004DK859 Application Date: 20041210

Language: English

Novel progeny cell derived from parent cell, and comprising gene encoding metallo regulated gene A MrgA protein or its functional homolog and/or DNA segment operably linked with encoding gene, useful for producing protein of interest plasmid-mediated gene transfer and expression in *Bacillus* sp. for recombinant protein production

Abstract: ...cell derived from a parent cell, and comprising a gene encoding metallo regulated gene A (MrgA) protein or its functional homolog and/or DNA segment operably linked with the encoding gene... being mutated with respect to the parent cell, where the cell produces greater amounts of MrgA protein or its functional homolog than the parent cell, is new. DETAILED DESCRIPTION - A progeny cell (I) derived from a parent cell, comprises a gene encoding metallo regulated gene A (MrgA) protein or its functional homolog and/or DNA segment operably linked with the encoding gene... manipulated with respect to the parent cell, two or more copies of a gene encoding MrgA protein or its functional homolog, or being mutated with respect to the parent cell, where the progeny cell produces greater amounts of MrgA protein or its

functional homolog than the parent cell. INDEPENDENT CLAIMS are also included for... ..interest, involves expressing the protein in (I); (2) preparation of (I); and (3) use of MrgA-protein or its functional homologue (II) for enhancing production of a protein by manipulating or mutating a cell to express greater amounts of MrgA-protein or its functional homologue than the non-manipulated or non-mutated cell.

BIOTECHNOLOGY - Preparation... ..production of a protein of interest, is produced by manipulating a cell to increase the expression of MrgA protein or its functional homologue, by identifying a gene from the parent cell that encodes MrgA protein or its functional homologue, and manipulating the cell to increase the expression of the identified gene, where the manipulated progeny cell expresses greater amounts of MrgA protein or its functional homologue, than the non-manipulated cell (claimed). Preferred Cell: (I) produces... ..a prokaryotic cell, more preferably a Gram-positive cell, and most preferably of the genus *Bacillus*. (I) is of a species chosen from *Bacillus alkalophilus*, *B. amyloliquefaciens*, *B. brevis*, *B. circulans*, *B. coagulans*, *B. lautus*, *B. lentus*, *B. licheniformis*... ..*stearothermophilus*, *B. subtilis*, and *B. thuringiensis*. The protein of interest is homologous or heterologous. The MrgA protein or its functional homologue comprises an amino acid sequence or an exogenous copy of a polynucleotide encoding MrgA protein or its functional homologue, which is at least 70% identical to a fully defined... ..80%, 85%, 90%, 95%, 97%, or even 99% identical to SEQ ID No. 2. The MrgA protein or its functional homologue comprises SEQ ID No. 2. The exogenous copy of polynucleotide... ..and more preferably under high stringency conditions. The exogenous copy of a gene encoding the MrgA protein or its functional homologue is transcribed from one or more heterologous and/or artificial... ..amounts of protein of interest than the parent cell (claimed). EXAMPLE - Metallo regulated gene A (*mrgA*) gene was amplified by PCR from the chromosome of *Bacillus subtilis* by use of primers p920mrgaF2 and MbmrgaR2. The upstream primer (p920mrgaF2) comprised the constitutive... ..had taken place. The site of integration was verified by PCR, the integrated copy of *mrgA* was verified by sequence analysis, and the strain was named AN36. AN36 was transformed with... ..of amylase from the control strain AN83. Results showed that the AN53 strain constitutively expressing *mrgA* from the synthetic promoter had an increased alpha-amylase yield, which on average was 13% higher than the control strain, AN83, which only comprised a wild-type copy of the *mrgA* gene. (49 pages)

E.C. Numbers:

Descriptors: recombinant protease, lipase, cutinase, *Bacillus amyloliquefaciens* alpha-amylase AmyQ, galactosidase, pullulanase, cellulase, glucose-isomerase, protein-disulfide-isomerase, cyclodextrin-gluconotransferase, phytase... ..protein toxin, microbial surface protein, virus protein prep., plasmid pKTH10-mediated metallo regulated gene-A, *mrgA* gene transfer, expression in *Bacillus subtilis*, *Bacillus alkalophilus*, *Bacillus brevis*, *Bacillus circulans*, *Bacillus coagulans*, *Bacillus lautus*, *Bacillus lentus*, *Bacillus licheniformis*, *Bacillus stearothermophilus*, *Bacillus thuringiensis*, DNA primer, polymerase chain reaction enzyme EC-3.1.1.3 EC-3.2...

Section: ...GENETIC TECHNIQUES and APPLICATIONS-Gene Expression Techniques and Analysis; BIOMANUFACTURING and BIOCATALYSIS-Biocatalyst Isolation and Characterization

4/KWIC/23 (Item 3 from file: 357)

Fulltext available through: [STIC Full Text Retrieval Options](#)

Derwent Biotech Res.

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0345901 DBA Accession No.: 2004-18193

Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp strain PCC 6803 for use in genomics

Author: LI H; SINGH AK; MCINTYRE LM; SHERMAN LA

Corporate Affiliate: Purdue Univ Purdue Univ

Corporate Source: Sherman LA, Purdue Univ, Dept Biol Sci, W Lafayette, IN 47907 USA

Journal: JOURNAL OF BACTERIOLOGY ( 186, 11, 3331-3345 ) 2004

ISSN: 0021-9193

Language: English

Differential gene expression in response to hydrogen peroxide and the putative PerR regulon of *Synechocystis* sp strain PCC...

Abstract: ...PCC 6803. We determined that a gene (slr1738) encoding a protein similar to PerR in *Bacillus subtilis* was induced by peroxide. We constructed a PerR knockout strain and used it to... ..been studied yet in this strain. A gene (slr1894) that encoded a protein similar to MrgA in *B. subtilis* was upregulated by peroxide, and a strain containing an mrgA knockout mutation was highly sensitive to peroxide. A number of genes were downregulated, including key... ..encoding histidine kinases. We used PerR mutants and a thioredoxin mutant (TrxA1) to study differential expression in response to peroxide and determined that neither PerR nor TrxA1 is essential for the...

E.C. Numbers:

Descriptors: cDNA microarray genome, *synechocystis* sp. perR regulon, hydrogen peroxide differential gene expression response in *Bacillus subtilis*, appl. genomics DNA array bacterium (23, 38)

Section: ...GENETIC TECHNIQUES and APPLICATIONS-Gene Expression Techniques and Analysis; GENETIC TECHNIQUES and APPLICATIONS-Genomic Technologies

4/KWIC/24 (Item 1 from file: 149)

TGG Health&Wellness DB(SM)

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02295789 Supplier Number: 111271473 (USE FORMAT 7 OR 9 FOR FULL TEXT )

Recognition of DNA by three Ferric uptake regulator (Fur) homologs in *Bacillus subtilis*.(Author Abstract)

Fuangthong, Mayuree; Helmann, John D.

Journal of Bacteriology , 185 , 21-22 , 6348(10)

Nov ,

2003

Document Type: Author Abstract Publication Format: Magazine/Journal; Refereed

ISSN: 0021-9193

Language: English

Record Type: Abstract Target Audience: Academic

Descriptors: Metabolic regulation--Genetic aspects; Nucleotides--Analysis; *Bacillus subtilis*--Genetic aspects; Genomes

Product/Industry Names: 2831830 (Nucleic Acid Derivatives)

NAICS Codes: 325414 Biological Product (except Diagnostic) Manufacturing

File Segment: AI File 88

Recognition of DNA by three Ferric uptake regulator (Fur) homologs in *Bacillus subtilis*.(Author Abstract)

Author Abstract: *Bacillus subtilis* contains three Fur homologs: Fur, PerR, and Zur. Despite significant sequence similarities, they respond... ..more of the seven defined positions. Using site-directed mutagenesis, the Per box at the mrgA promoter was altered to mimic the core 7-1-7 motif of the Fur and Zur boxes. In vitro, the mrgA promoter containing a Zur box was only recognized by Zur, as demonstrated by DNase I footprinting assays. In contrast, both



Fur and PerR bound to the mrgA promoter region containing a consensus Fur box. Expression analysis of these promoters is consistent with the in vitro data demonstrating as few as... ..purified Fur protein bound to the candidate Fur boxes, Fur has little effect on zosA expression--possibly due to the location of the Fur boxes relative to the zosA promoter. Together...

Text:

Special Features:

Descriptors: ...Bacillus subtilis

Geographic Codes:

4/KWIC/25 (Item 1 from file: 399)

Fulltext available through: [STIC Full Text Retrieval Options](#)

CA SEARCH(R)

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144003172 CA: 144(1)3172k JOURNAL

The H<sub>2</sub>O<sub>2</sub> stress-responsive regulator PerR positively regulates srfA expression in *Bacillus subtilis*

Author: Hayashi, Kentaro; Ohsawa, Taku; Kobayashi, Kazuo; Ogasawara, Naotake; Ogura, Mitsuo

Location: Department of Marine Science, School of Marine Science and Technology, Tokai University, 3-20-1 Orido, Shimizu, Shizuoka, Japan, 424-8610

Journal: J. Bacteriol.

Date: 2005

Volume: 187 Number: 19 Pages: 6659-6667

CODEN: JOBAAY

ISSN: 0021-9193

Language: English

Publisher: American Society for Microbiology

4/KWIC/26 (Item 2 from file: 399)

Fulltext available through: [STIC Full Text Retrieval Options](#)

CA SEARCH(R)

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143244743 CA: 143(14)244743g JOURNAL

Genetic and physiological responses of *Bacillus subtilis* to metal ion stress

Author: Moore, Charles M.; Gaballa, Ahmed; Hui, Monica; Ye, Rick W.; Helmann, John D.

Location: Department of Microbiology, Cornell University, Ithaca, NY, 14853, USA

Journal: Mol. Microbiol.

Date: 2005

Volume: 57 Number: 1 Pages: 27-40

CODEN:

MOMIEE

ISSN: 0950-382X

Language: English

Publisher: Blackwell Publishing Ltd.

4/KWIC/27 (Item 3 from file: 399)

CA SEARCH(R)

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143054467 CA: 143(4)54467x PATENT

A cell with improved secretion mediated by MrgA protein from *Bacillus subtilis* or its homolog, and uses in industrial protein production

Inventor (Author): Nielsen, Allan Kent; Rasmussen, Michael Dolberg

Location: Den.

Assignee: Novozymes A/S

Patent: PCT International ; WO 200556799 A1 Date: 20050623

Application: WO 2004DK859 (20041210) \*DK 20031824 (20031210)

Pages: 49 pp.

CODEN: PIXXD2

Language: English

Patent Classifications:

Class: C12N-015/31A; C12N-015/75B; C12N-001/21B; C07K-014/32B; C12P-021/02B; C12N-009/28B; C12N-015/56B; C12R-001/07B

Designated Countries: AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VC; VN; YU; ZA; ZM; ZW

Designated Regional: BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL; SZ; TZ; UG; ZM; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IS; IT; LT; LU; MC; NL; PL; PT; RO; SE; SI; SK; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW; ML; MR; NE; SN; TD; TG

4/KWIC/28 (Item 4 from file: 399)

CA SEARCH(R)

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142368712 CA: 142(20)368712v PATENT

Methods for identifying markers of antimicrobial compounds by bacterial gene expression profiling in response to antibiotics

Inventor (Author): Yaver, Debbie; Sloma, Alan

Location: USA

Assignee: Novozymes Biotech, Inc.

Patent: U.S. Pat. Appl. Publ. ; US 20050074844 A1 Date: 20050407

Application: US 2003656055 (20030905) \*US 2002PV409254 (20020906)

Pages: 36 pp.

CODEN: USXXCO

Language: English

Patent Classifications:

Class: 435069100; C12P-021/06A; C12N-001/20B

4/KWIC/29 (Item 5 from file: 399)

Fulltext available through: [STIC Full Text Retrieval Options](#)

CA SEARCH(R)

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141257139 CA: 141(16)257139y JOURNAL

Response of *Bacillus subtilis* to nitric oxide and the nitrosating agent sodium nitroprusside

Author: Moore, Charles M.; Nakano, Michiko M.; Wang, Tao; Ye, Rick W.; Helmann, John D.

Location: Department of Microbiology, Cornell University, Ithaca, NY, 14853, USA

Journal: J. Bacteriol.

Date: 2004

Volume: 186 Number: 14 Pages: 4655-4664

CODEN: JOBAAY

ISSN: 0021-9193

Language: English

Publisher: American Society for Microbiology

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